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(54) COATING LIQUID FOR FORMING SILICA-BASED COATING FILM, SILICA-BASED COATING FILM AND SEMICONDUCTOR DEVICE USING THE SAME

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a coating liquid used for forming silica-based coating films, good in thick coating film formability, and enabling to produce the silica-based coating films not generating cracks, to provide the silica coating film, and to provide a semiconductor device having the silica-based coating film as an interlayer insulating film.

SOLUTION: This coating film liquid for forming silica-based coating films contains a siloxane oligomer obtained by hydrolyzing and polycondensing (A) a trialkoxysilane of the formula: HSi(OR)_3 (R groups are each a 1-4C alkyl group; the three R groups are the same or different from each other) and a hexaalkoxydisilane of the formula: $(\text{RO})_3\text{Si-Si(OR)}_3$ (R groups are each a 1-4C alkyl; the six R groups are the same or different from each other) in the presence of water and a catalyst in a solvent. The silica-based coating film is obtained by coating the coating liquid on the surface of a substrate, drying the coated coating at 50-200°C and subsequently baking the dried coating film at 300-500°C. The semiconductor device is obtained by using the silica-based coating film as an interlayer insulating film.

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